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United States
Department of
Agriculture

Natural
Resources
Conservation
Service

Washington Basin Outlook Report June 1, 1999

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Basin Outlook Reports

and Federal - State - Private Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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Washington Water Supply Outlook

June 1999

General Outlook

Below average temperatures during May helped sustain the mountain snowpack at much above average levels. Sporadic warm spells did however contribute snowmelt water to mountain streams. Rivers in the state are experiencing normal spring time flows at this time. Washington's recreational and water supply outlook is very positive for the coming summer months.

Snowpack

The June 1 statewide snowpack remains much above average. Most SNOTEL sites in the state still have snow cover. River basin averages have been difficult to calculate and appear to be extreme because snowpack at many of these sites would have melted by June 1. Also, manual snow survey data are collected at only a handful of sites on June 1. Maximum snow cover in Washington was at Paradise Park SNOTEL near Mount Rainer. The water content was 106.8 inches on June 1. This site would normally have 48.1 inches of water content on that date. Last year at this time, Paradise Park had 60.8 inches of snow water equivalent.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	710	143
Pend Oreille	370	149
Okanogan	289	242
Methow	298	230
Wenatchee	293	243
Chelan	255	238
Upper Yakima	380	288
Lower Yakima	177	251
Ahtanum Creek	241	661
Lower Snake	274	177
Cowlitz	206	226
Lewis	560	1041
White	151	208
Green	436	413
Puyallup	151	208
Snoqualmie	270	247
Skykomish	261	272
Skagit	309	217
Baker	159	163
Nooksack	N/A	302
Olympic Peninsula	66	N/A

Precipitation

For the month of May, the National Weather Service and Natural Resources Conservation Service climate stations showed precipitation accumulation to vary from much below average to much above average across Washington. However, basin averages for the water-year varied from 151% of average in the Olympic Peninsula river basins to 107% of average in the Lower Snake River Basin. The highest individual site average for the water-year was 216% of average at Thunder Basin SNOTEL site in the North Cascade Mountains. Many SNOTEL precipitation gauges were plagued by snow plugs throughout the winter, making it difficult to track monthly accumulations. Snow plugs are caused by large amounts of heavy wet snow falling into the gauge and freezing before it can melt. These plugs generally break loose prior to spring melt and do not effect the total accumulation for the water-year.

RIVER BASIN	MAY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	65	113
Colville-Pend Oreille	95	122
Okanogan-Methow	126	135
Wenatchee-Chelan	124	139
Upper Yakima	128	129
Lower Yakima	96	131
Walla Walla	88	108
Lower Snake	66	107
Cowlitz-Lewis	135	137
White-Green-Puyallup	113	123
Central Puget Sound	139	132
North Puget Sound	148	135
Olympic Peninsula	109	151

Reservoir

Reservoir storage in the Yakima Basin was 652,000-acre feet, or 88% of average for the upper reaches and 177,600-acre feet, or 92% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 114% of average for June 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 352,500-acre feet, or 126% of average and 148% of capacity; Chelan Lake, 324,400-acre feet, 72% of average and 48% of capacity; and Diablo Reservoir at 102% of average and 97% of capacity. After lowering water levels in anticipation of considerable runoff, most reservoir operators have begun to refill and prepare for summer demands.

BASIN	PERCENT OF CAPACITY	PERCENT OF AVERAGE
Spokane	148	126
Colville-Pend Oreille	N/A	N/A
Okanogan-Methow	88	114
Wenatchee-Chelan	48	72
Upper Yakima	78	88
Lower Yakima	77	92
Five Yakima Reservoirs	77	90
North Puget Sound	97	102

Streamflow

June 1 forecasts indicate above normal summer flows for all streams in the state. They vary from 107% of average for the Colville River at Kettle Falls to 106% of average for the Similkameen near Nighthawk. June forecasts for some Western Washington streams include: Cedar River near Cedar Falls, 122%; Lewis River, 195%; and the Skagit River, 133%. Some Eastern Washington streams include the Yakima River near Parker, 163%; the Wenatchee River at Plain, 147%; and the Spokane River near Post Falls, 129%. Volumetric forecasts are developed using current, historic, and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS. Forecasts are an indication of average sustained streamflow and are not indicative of peak and low flow conditions.

Streamflows reported for May varied from well above to below average. The South Fork Walla Walla River near Milton Freewater had the highest flows with 138% of average. The Pend Oreille River below Box Canyon, with 85% of average, had the lowest in the state. Other streamflows were the following percentage of average: the Priest River, 112%; the Columbia at the International Boundary, 93%; the Spokane at Spokane, 101%; the Columbia below Rock Island Dam, 95%; the Cle Elum River near Roslyn, 100%; and the Snake River below Ice Harbor Dam, 108%. Average monthly streamflows are not an indicator of peak and low flow conditions.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
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Spokane	126-129
Colville-Pend Oreille	124-187
Okanogan-Methow	106-177
Wenatchee-Chelan	140-155
Upper Yakima	134-155
Lower Yakima	140-186
Walla Walla	115-156
Lower Snake	N/A
Cowlitz-Lewis	186-195
White-Green-Puyallup	109-115
Central Puget Sound	122-132
North Puget Sound	126-137
Olympic Peninsula	136-158

STREAM	PERCENT OF AVERAGE MAY STREAMFLOWS
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Pend Oreille Below Box Canyon	85
Kettle at Laurier	108
Columbia at Birchbank	93
Spokane at Long Lake	112
Similkameen at Nighthawk	96
Okanogan at Tonasket	113
Methow at Pateros	110
Chelan at Chelan	95
Wenatchee at Pashastin	97
Yakima at Cle Elum	98
Yakima at Parker	113
Naches at Naches	116
Grande Ronde at Troy	121
Snake below Lower Granite Dam	109
SF Walla Walla near Milton Freewater	138
Cowlitz below Junefield Dam	112
Skagit at Concrete	92

For more information contact your local Natural Resources Conservation Service office.

BASIN SUMMARY OF SNOW COURSE DATA

JUNE 1999

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
ALPINE MEADOWS PILL	3500	6/01/99	---	45.4E	29.6	22.7
BADGER PASS PILLOW	6900	6/01/99	---	36.8	.0	20.9
BARKER LAKES PILLOW	8250	6/01/99	---	13.0	5.4	10.0
BASIN CREEK PILLOW	7180	6/01/99	---	5.5	.0	4.7
BEAVER CREEK TRAIL	2200	5/27/99	9	3.6	.0	--
BEAVER PASS	3680	5/27/99	98	50.0	7.1	--
BERNE-MILL CREEK (d)	3170	5/30/99	64	31.8	--	--
BIG CREEK	6750	5/27/99	81	40.6	--	42.1
BIG WHITE MTN CAN.	5100	5/30/99	35	17.2	--	7.6
BLACK PINE PILLOW	7100	6/01/99	---	.0	.0	2.4
BLACKWALL PEAK CAN.	6370	6/01/99	---	41.7	--	26.2
BLEWETT PASS#2PILLOW	4270	6/01/99	---	.0	.0	.0
BROWN TOP AM	6000	5/26/99	181	92.8	35.6	--
BUMPING LAKE (NEW)	3400	5/27/99	19	9.2	--	--
BUMPING RIDGE PILLOW	4600	6/01/99	---	41.7	12.8	6.3
BUNCHGRASS MDWPILLOW	5000	6/01/99	---	31.5	4.0	15.4
CAUSE PASS	5300	5/20/99	281	83.8	73.0	67.8
CHICKEN CREEK	4060	5/28/99	0	.0	.0	.0
COMBINATION PILLOW	5600	6/01/99	---	.0	.0	.0
COPPER BOTTOM PILLOW	5200	6/01/99	---	.0	.0	.0
CORRAL PASS PILLOW	6000	6/01/99	---	49.9	27.9	19.6
COUGAR MTN. PILLOW	3200	6/01/99	---	12.3	.0	.0
DAILY CREEK PILLOW	5780	6/01/99	---	.0	.0	.0
DEVILS PARK	5900	5/26/99	117	62.8	19.0	31.8
DISCOVERY BASIN	7050	5/28/99	3	1.6	.0	4.2
DOCK BUTTE AM	3800	6/01/99	---	94.5E	55.0	52.5
EASY PASS AM	5200	6/01/99	---	110.0E	74.0	73.3
ELBOW LAKE PILLOW	3200	6/01/99	79	45.6	.0	6.1
EMERY CREEK PILLOW	4350	6/01/99	---	.0	.0	.0
ENDERBY CAN.	5800	5/31/99	110	55.5	--	38.9
FISH LAKE PILLOW	3370	6/01/99	---	27.5	.0	5.0
FLATTOP MTN PILLOW	6300	6/01/99	---	52.7	21.1	34.4
FREEZEOUT CK. TRAIL	3500	5/28/99	14	6.0	.0	--
FROHNER MDWS PILLOW	6480	6/01/99	---	.0	.0	1.2
GRAVE CRK PILLOW	4300	6/01/99	---	.0	.0	.0
GREEN LAKE PILLOW	6000	6/01/99	49	21.6	10.4	3.8
GROUSE CAMP PILLOW	5380	6/01/99	---	3.3	.0	.0
HAND CREEK PILLOW	5030	6/01/99	---	.0	.0	.0
HARTS PASS PILLOW	6500	6/01/99	---	61.2	21.2	25.3
HELL ROARING DIVIDE	5770	5/28/99	39	19.6	1.4	11.2
HERRIG JUNCTION	4850	5/28/99	31	16.0	.0	2.4
HIGH RIDGE PILLOW	4980	6/01/99	---	.0	.0	.6
BOODOO BASIN PILLOW	6050	6/01/99	---	49.3	17.3	29.2
HUMBOLDT GLCH PILLOW	4250	6/01/99	---	.0	.0	.0
JUNE LAKE PILLOW	3200	6/01/99	---	60.6	.0	.0
KRAFT CREEK PILLOW	4750	6/01/99	---	.0	.0	.0
LOLO PASS PILLOW	5240	6/01/99	---	19.6	.0	.0
LONE PINE PILLOW	3800	6/01/99	---	75.8	21.1	9.4
LOOKOUT PILLOW	5140	6/01/99	---	22.7	.0	10.0
LOST HORSE PILLOW	5000	6/01/99	---	3.5	.0	.0
LOST LAKE PILLOW	6110	6/01/99	---	58.5	17.2	46.8
LUBRECHT FOREST NO 3	5450	5/28/99	0	.0	--	--
LUBRECHT FOREST NO 4	4650	5/28/99	0	.0	--	--
LUBRECHT FOREST NO 6	4040	5/28/99	0	.0	--	--
LUBRECHT HYDROPLT	4200	5/28/99	0	.0	--	--
LUBRECHT PILLOW	4680	6/01/99	---	.0	.0	.0
LYMAN LAKE PILLOW	5900	6/01/99	---	86.2	49.6	43.3
MEADOWS CABIN	1900	5/26/99	0	.0	.0	--
MEADOWS PASS PILLOW	3240	6/01/99	---	8.5E	.0	.0

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
MICA CREEK PILLOW	4750	6/01/99	---	1.9	.0	--
MISSION CREEK CAN.	5800	6/01/99	---	25.2	--	13.6
MOOSE CREEK PILLOW	6200	6/01/99	---	.0	.0	.0
MORRISSEY RIDGE CAN.	6100	6/01/99	---	15.9	--	10.7
MORSE LAKE PILLOW	5400	6/01/99	---	92.3	48.9	21.4
MOSES MTN PILLOW	4800	6/01/99	---	1.2	.0	.0
MOSQUITO RDG PILLOW	5200	6/01/99	---	26.9	.0	16.0
MOUNT BLUM AM	5800	6/01/99	---	108.0E	--	68.1
MOUNT CRAG PILLOW	4050	6/01/99	---	10.0E	15.2	.0
MT. KOBAU CAN.	5500	5/30/99	38	17.2	--	5.0
MOUNT GARDNER PILLOW	2860	6/01/99	---	.1	.0	.0
N.F. ELK CR PILLOW	6250	6/01/99	---	.0	.0	.9
NEVADA CREEK PILLOW	6480	6/01/99	---	7.9	.0	3.8
NEW HOZOMEEN LAKE	2800	5/28/99	0	.0	.0	--
NEZ PERCE CMP PILLOW	5650	6/01/99	---	.0	.0	.2
NOISY BASIN PILLOW	6040	6/01/99	---	34.8	20.1	30.2
NORFORK JOCKO	6330	5/27/99	64	33.0	7.4	26.3
OLALLIE MDWS PILLOW	3960	6/01/99	---	81.9	22.9	30.0
OLALLIE MEADOWS	3630	6/01/99	---	69.0E	33.0	41.3
OPBIR PARK	7150	5/30/99	10	3.4	--	7.6
PARADISE PARK PILLOW	5500	6/01/99	---	106.7	60.8	48.1
PARK CK RIDGE PILLOW	4600	6/01/99	---	48.2	.7	5.2
PETERSON MDW PILLOW	7200	6/01/99	---	5.2	1.0	2.7
PIGTAIL PEAK PILLOW	5900	6/01/99	141	79.4	36.0	37.5
PIKE CREEK PILLOW	5930	6/01/99	---	13.8	.0	7.9
POPE RIDGE PILLOW	3540	6/01/99	0	.0	.0	.0
POTATO BILL PILLOW	4500	6/01/99	---	26.2	1.7	1.1
QUARTZ PEAK PILLOW	4700	6/01/99	---	4.8	.0	.0
RAINY PASS PILLOW	4780	6/01/99	---	43.9	14.1	20.4
REX RIVER PILLOW	1900	6/01/99	51	21.2	.0	.0
ROCKER PEAK PILLOW	8000	6/01/99	---	12.4	7.8	13.2
SADDLE MTN PILLOW	7900	6/01/99	---	20.7	13.6	17.5
SALMON MDWS PILLOW	4500	6/01/99	---	.0	.0	.0
SASSE RIDGE PILLOW	4200	6/01/99	---	35.0	.0	1.3
SAVAGE PASS PILLOW	6170	6/01/99	---	18.1	2.5	12.5
SCHREIBERS MDW AM	3400	6/01/99	---	70.0E	--	41.4
SHEEP CANYON PILLOW	4050	6/01/99	---	68.4	12.6	11.6
SILVER STAR MTN CAN.	5600	5/27/99	69	35.7	--	16.1
SKALKAH PILLOW	7260	6/01/99	---	18.8	9.7	.0
SKOOKUM CREEK PILLOW	3920	6/01/99	---	22.9	.0	.0
SPENCER MDW PILLOW	3400	6/01/99	---	46.6	.0	.0
SPIRIT LAKE PILLOW	3100	6/01/99	---	.0	.0	.0
STAHL PEAK PILLOW	6030	6/01/99	---	40.0	22.2	27.3
STAMPEDE PASS PILLOW	3860	6/01/99	---	49.6	14.2	15.0
STEVENS PASS PILLOW	4070	6/01/99	---	31.8	.0	5.7
STEVENS PASS SAND SD	3700	5/30/99	57	28.7	--	9.7
STRYKER BASIN	6180	5/28/99	50	31.0	6.6	20.6
SUNSET PILLOW	5540	6/01/99	---	9.2	.0	12.5
SURPRISE LKS PILLOW	4250	6/01/99	---	65.8	23.3	14.5
THUNDER BASIN	4200	5/28/99	72	34.6	--	10.0
TINKHAM CREEK PILLOW	3000	6/01/99	---	.0	.0	.0
TOUCHET #2 PILLOW	5530	6/01/99	---	18.4	.0	.0
TROUB #2 PILLOW	5310	6/01/99	---	.0	.0	6.0
TWELVEMILE PILLOW	5600	6/01/99	---	.0	.0	.6
TWIN LAKES PILLOW	6400	6/01/99	---	36.0	6.5	25.8
UPPER WHEELER PILLOW	4400	6/01/99	---	.0	.0	.0
WARM SPRINGS PILLOW	7800	6/01/99	---	19.2	14.3	19.6
WELLS CREEK PILLOW	4200	6/01/99	87	40.0	.0	22.2
WHITE PASS ES PILLOW	4500	6/01/99	---	20.6	2.5	4.6



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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:

<http://www.wa.nrcs.usda.gov/nrcs/CoopSnoSrvy.htm>

Oregon:

<http://crystal.or.nrcs.usda.gov/snowsveys>

Idaho:

<http://idsnow.id.nrcs.usda.gov>

National Water and Climate Center (NWCC):

<http://www.wcc.nrcs.usda.gov>

NWCC Anonymous FTP Server:

<ftp.wcc.nrcs.usda.gov>

USDA-NRCS Agency Homepages

Washington:

<http://www.wa.nrcs.usda.gov/nrcs>

NRCS National:

<http://www.ftw.nrcs.usda.gov>



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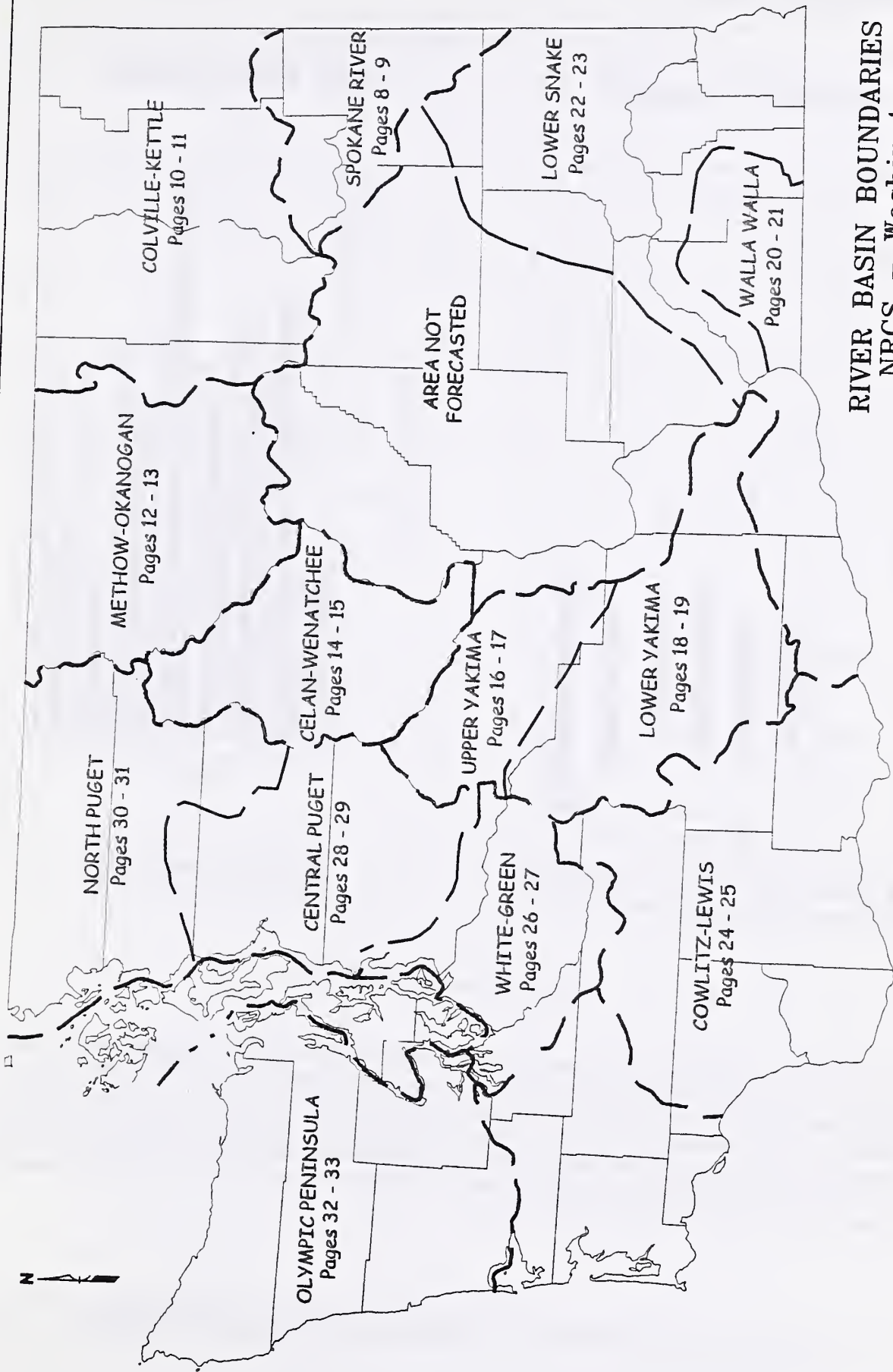
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Data Collection Offices

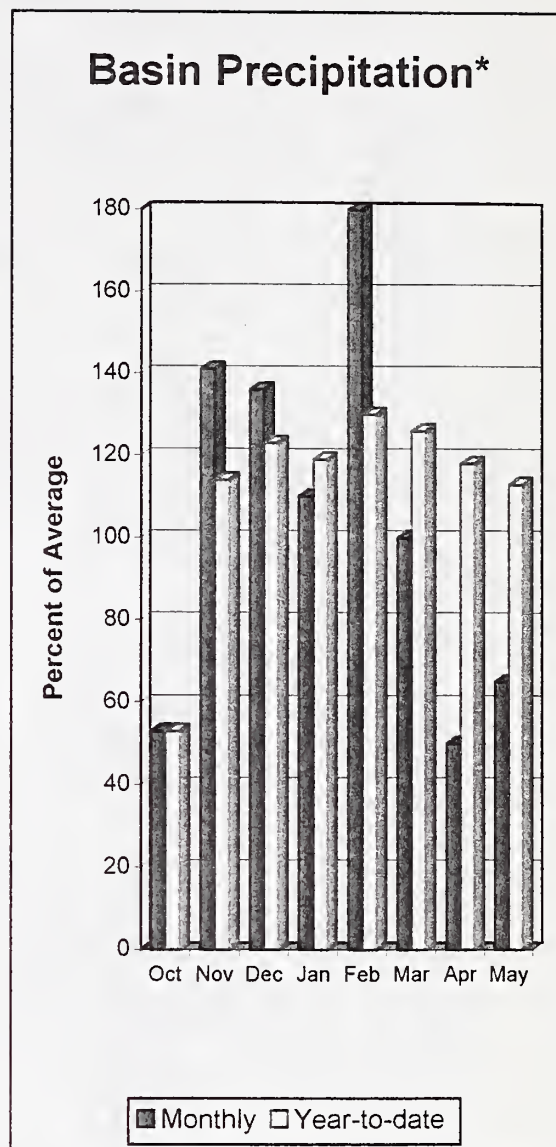
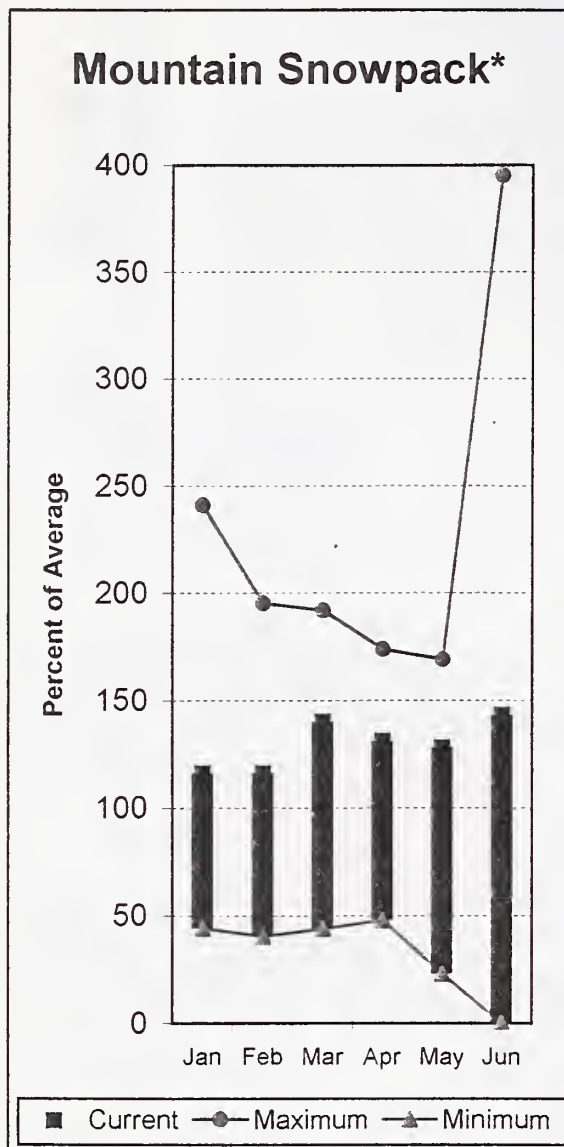
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RIVER BASIN BOUNDARIES
NRCS - Washington
1999

Spokane River Basin



*Based on selected stations

The June 1 forecasts for summer runoff within the Spokane River Basin are 129% of average near Post Falls and 126% of average at Long Lake. The forecasts are based on a basin snowpack that is 143% of average and precipitation that is 113% of average for the water-year. Precipitation for May was 65% of average. Streamflow for the Spokane River at Long Lake, was 112% of average for May. June 1 storage in Coeur d'Alene Lake, was 352,500-acre feet, 126% of average and 148% of capacity. Snowpack at Quartz Peak SNOTEL site contained 4.8 inches of water, normally the snow would have melted by this time at Quartz Peak. Average temperatures in the Spokane Basin were about 2 degrees below normal.

For more information contact your local Natural Resources Conservation Service office.

Spokane River Basin

Streamflow Forecasts - June 1, 1999

SPOKANE near Post Falls (2)	JUN-SEP	799	934	1025	129	1116	1251	794
	JUN-JUL	705	821	900	129	979	1095	697
SPOKANE at Long Lake	JUN-JUL	885	1004	1085	126	1166	1285	861
	JUN-SEP	1135	1275	1370	127	1465	1605	1083

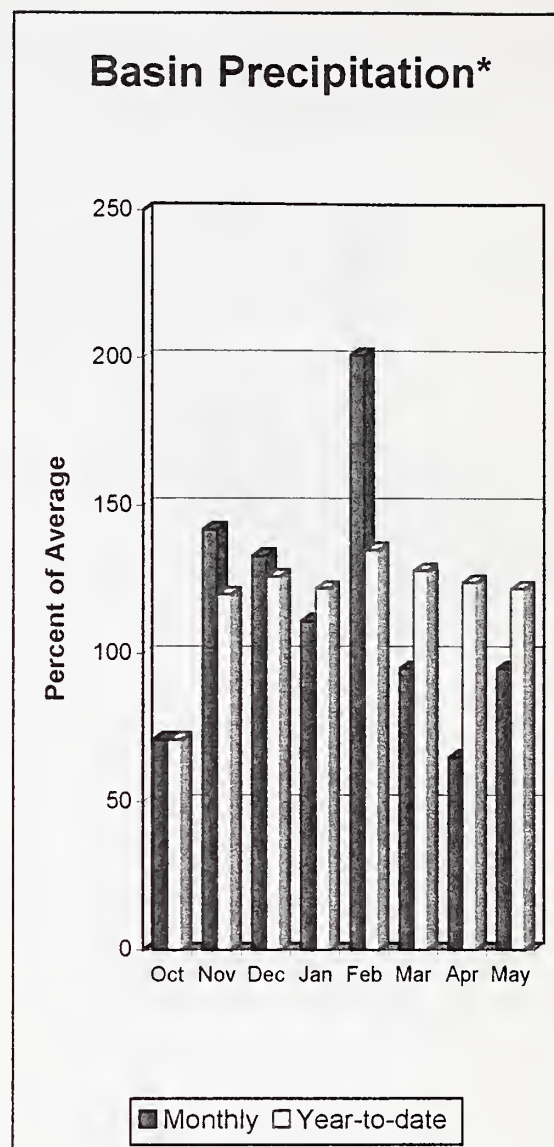
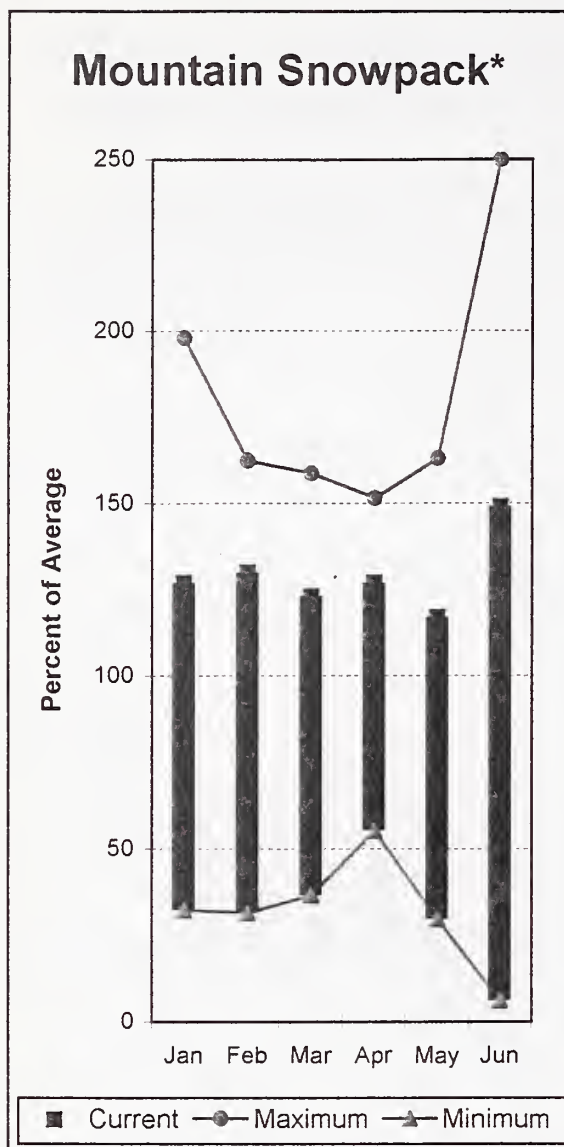
SPOKANE RIVER BASIN Reservoir Storage (1000 AF) - End of May					SPOKANE RIVER BASIN Watershed Snowpack Analysis - June 1, 1999			
Reservoir	Usable Capacity	*** This Year	Usable Storage Last Year	*** Avg	Watershed	Number of Data Sites	This Year as % of Last Yr	% of Average
COEUR D'ALENE	238.5	352.5	259.0	280.5	SPOKANE RIVER	7	710	143
					NEWMAN LAKE	1	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

Colville - Pend Oreille River Basins



*Based on selected stations

The June - September forecast for the Kettle River streamflow is 126% of average; the Priest River near the town of Priest River, 124%; and the Colville River at Kettle Falls, 187% of average. May streamflow was 85% of average on the Pend Oreille River; 93% on the Columbia at the International Boundary; and 108% on the Kettle River. June 1 snow cover was 149% of average in the Pend Oreille Basin. Bunchgrass Meadows SNOTEL site recorded 31.5 inches of snow-water-equivalent on June 1. Average June 1 snowpack for Bunchgrass Meadows is 15.4 inches. Precipitation during May was 95% of average, bringing the year-to-date precipitation to 122% of average. Average temperatures were about 2 degrees below normal for the month.

For more information contact your local Natural Resources Conservation Service office.

Colville - Pend Oreille River Basins

Streamflow Forecasts - June 1, 1999

Forecast Point	Forecast Period	<<===== Drier =====		Future Conditions		===== Wetter =====>>		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	Chance Of Exceeding * (% AVG.)	30% (1000AF)	10% (1000AF)	
PRIEST nr Priest River (1,2)	JUN-JUL	315	369	393	132	417	471	298
	JUN-SEP	364	426	454	129	482	544	351
CHAMOKANE CREEK near Long Lake	JUL-AUG	4.61	4.82	4.97	159	5.12	5.33	3.12
COLVILLE at Kettle Falls	JUN-SEP	60	70	77	187	84	94	41
	JUN-JUL	42	51	57	191	63	72	30
KETTLE near Laurier	JUN-SEP	874	994	1075	126	1156	1276	851
	JUN-JUL	801	896	961	127	1026	1121	758
COLUMBIA at Birchbank (1,2)	JUN-JUL	23879	26025	27000	118	27975	30121	22910
	JUN-SEP	32924	35658	36900	117	38142	40876	31580
COLUMBIA at Grand Coulee Dm (1,2)	JUN-SEP	45725	49559	51300	123	53041	56875	41706
	JUN-JUL	34925	38071	39500	126	40929	44075	31400

COLVILLE - PEND OREILLE RIVER BASINS Reservoir Storage (1000 AF) - End of May

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
ROOSEVELT		NO REPORT		
BANKS		NO REPORT		

COLVILLE - PEND OREILLE RIVER BASINS Watershed Snowpack Analysis - June 1, 1999

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
COLVILLE RIVER	0	0	0
PEND OREILLE RIVER	42	370	149
KETTLE RIVER	0	0	0

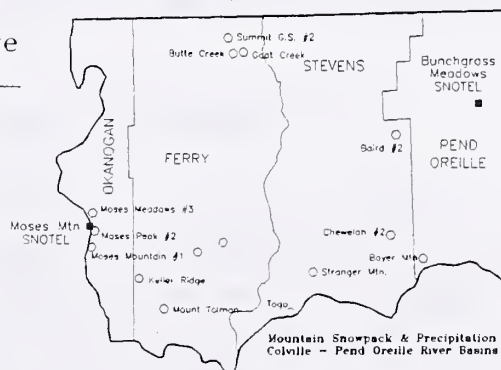
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

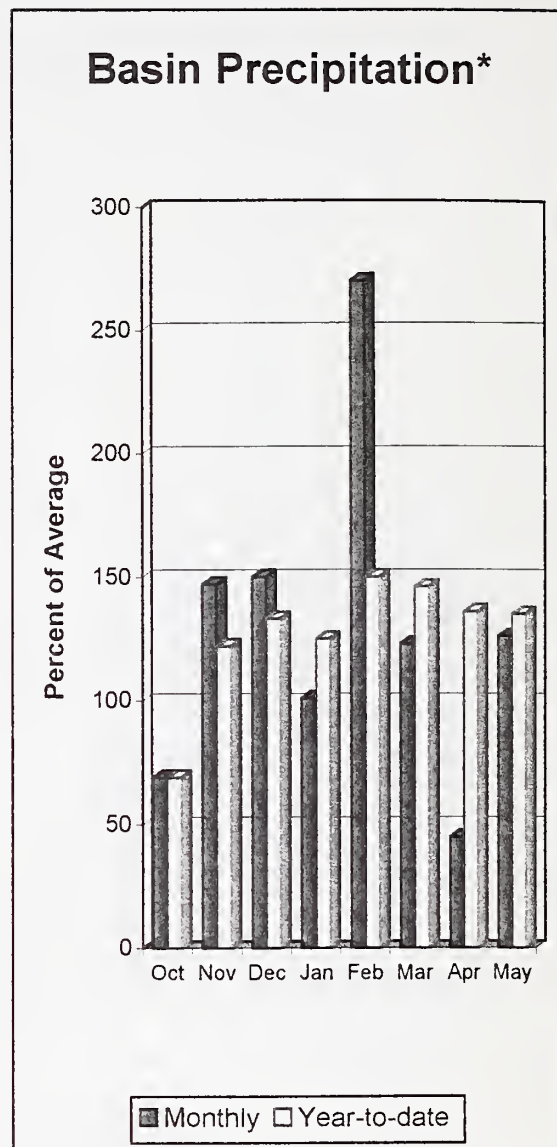
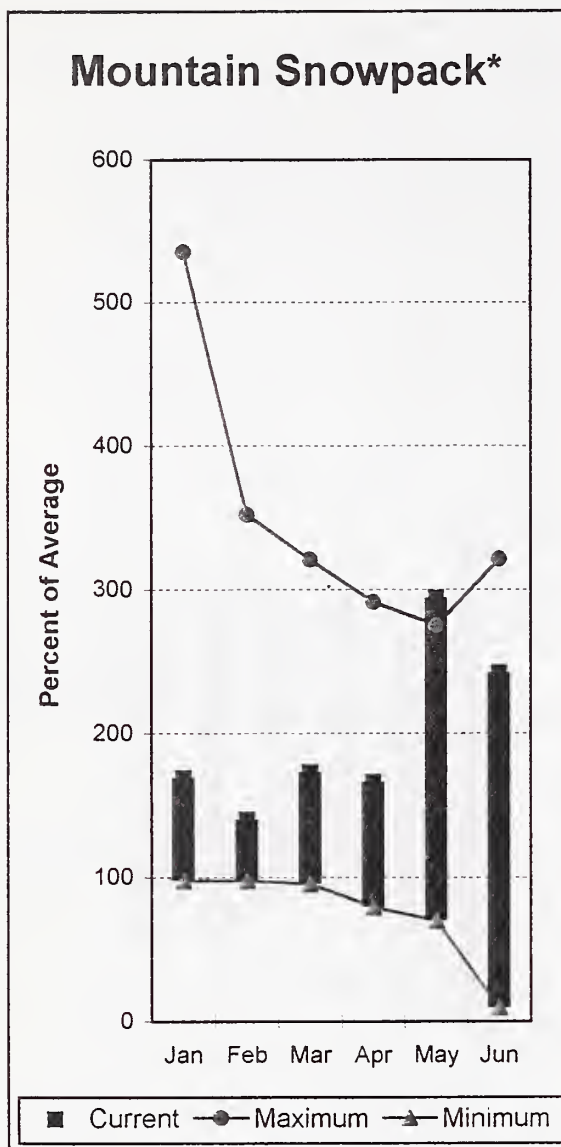
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Water-Year Percent of Average June 1, 1999

Snowpack - 149%
 Precipitation - 122%
 Reservoir - N/A



Okanogan - Methow River Basins



*Based on selected stations

Summer runoff forecast for the Okanogan River is for 122% of average; the Similkameen River, 119%; the Methow River, 177%; and Salmon Creek, 128% of average. June 1 snow cover in the Okanogan Basin was 242% of average and the Methow Basin was 230%. Harts Pass SNOTEL site had a June 1 reading of 61.2 inches or 242% of average. May precipitation in the Okanogan-Methow was 126% of average, with precipitation for the water-year at 135% of average. May streamflow for the Methow River was 110% of average; 113% for the Okanogan River; and 96% for the Similkameen. Salmon Meadows SNOTEL, near Conconully, reported a normal melt for the season. Combined storage in the Conconully Reservoirs was 20,600-acre feet, which is 88% of capacity and 114% of the June 1 average. Temperatures were slightly below normal for the past month.

For more information contact your local Natural Resources Conservation Service office.

Okanogan - Methow River Basins

Streamflow Forecasts - June 1, 1999

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
SIMILKAMEEN near Nighthawk (1)	JUN-JUL	649	822	900	119	978	1151	755
	JUN-SEP	754	930	1010	119	1090	1266	850
	JUN-JUN	471	608	670	119	732	869	564
OKANOGAN near Tonasket (1)	JUN-JUL	716	932	1030	122	1128	1344	848
	JUN-SEP	868	1113	1225	122	1337	1582	1005
	JUN-JUN	493	670	750	122	830	1007	615
SALMON CREEK near Conconully	JUN-JUL	4.87	9.05	11.90	128	14.75	18.93	9.30
	JUN-SEP	5.3	9.9	13.0	128	16.1	21	10.2
METHOW RIVER near Pateros	JUN-SEP	862	932	980	177	1028	1098	555
	JUN-JUL	758	819	860	177	901	962	486
	JUN-JUN	555	606	640	178	674	725	359

OKANOGAN - METHOW RIVER BASINS Reservoir Storage (1000 AF) - End of May					OKANOGAN - METHOW RIVER BASINS Watershed Snowpack Analysis - June 1, 1999			
Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg	Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SALMON LAKE	10.5	7.3	10.0	9.0	OKANOGAN RIVER	2	289	242
CONCONULLY RESERVOIR	13.0	13.3	13.4	9.0	OMAK CREEK	1	0	0
					SANPOIL RIVER	0	0	0
					SIMILKAMEEN RIVER	0	0	0
					TOATS COULEE CREEK	0	0	0
					CONCONULLY LAKE	1	0	0
					METHOW RIVER	3	298	230

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

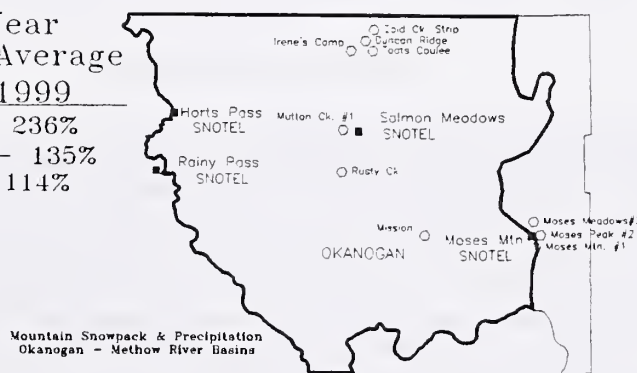
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Water-Year Percent of Average June 1, 1999

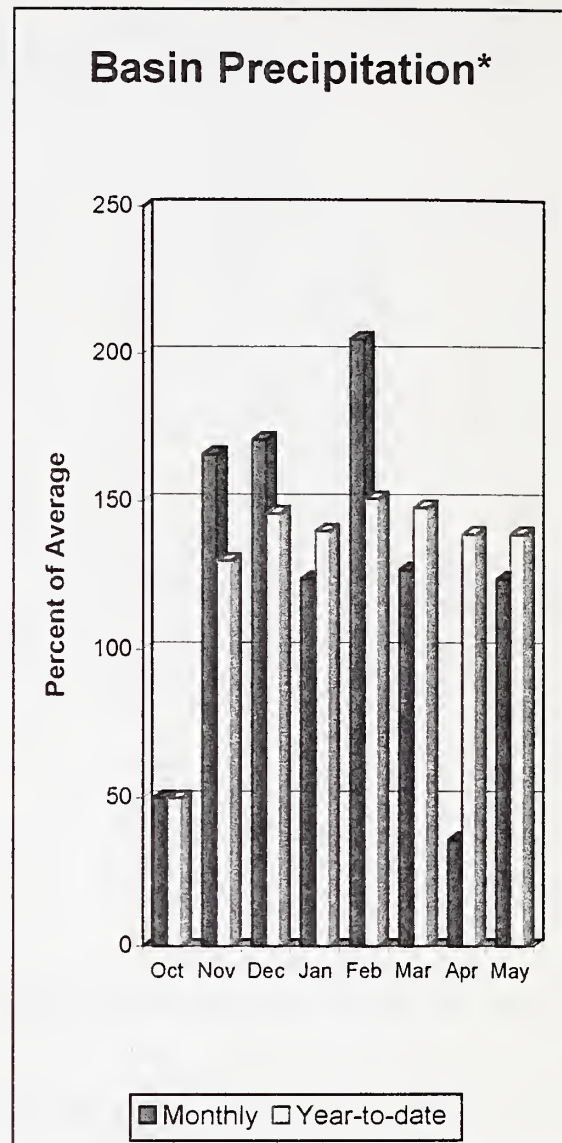
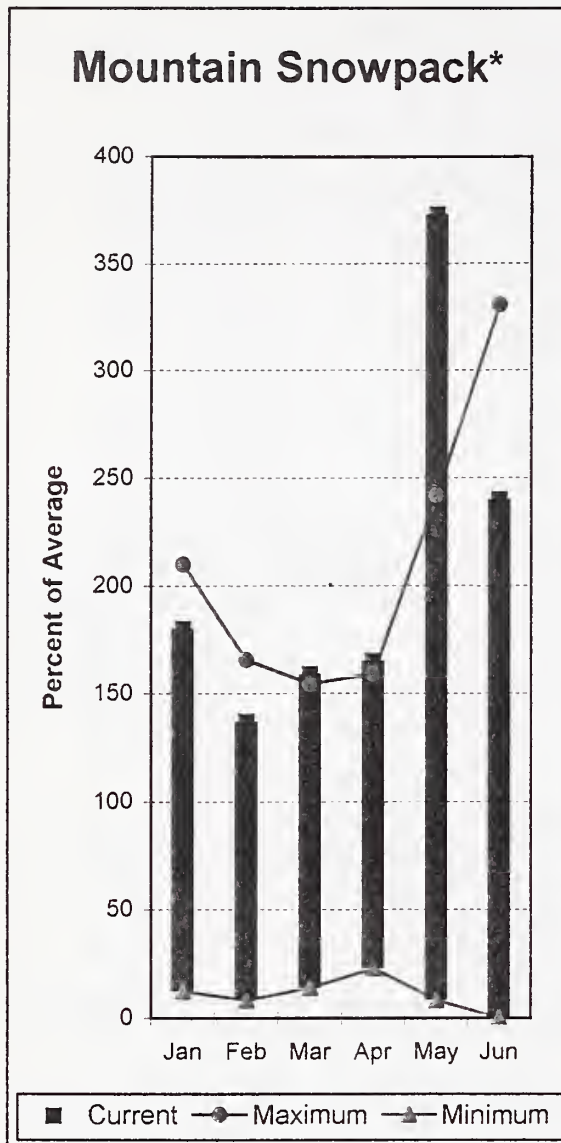
Snowpack - 236%

Precipitation - 135%

Reservoir - 114%



Wenatchee - Chelan River Basins



*Based on selected stations

Precipitation during May was 124% of average in the combined basins and 139% for the year-to-date. Runoff for the Entiat River is forecast to be 145% of average for the summer. The June-September forecast for the Chelan River streamflow is for 155% of average; it is 147% for the Wenatchee River at Plain; and for the Stehekin it is 145% of average. Icicle, Stemilt and Squilchuck creeks are all expected to be above average this summer as well. May streamflows on the Chelan River were 95% of average. The Wenatchee River averaged 97% of normal flows. June 1 snowpack in the Wenatchee Basin was 243% of average. The Chelan Basin was 238% of average; Colockum Ridge and Stemilt Creek reported normal snow melt for the season. Snowpack at Pope Ridge SNOTEL in the Entiat River Basin had also melted for the season. Reservoir storage in Lake Chelan was 324,400-acre feet, or 72% of June 1 average and 48% of capacity. Lyman Lake SNOTEL had the most snow water equivalent with 86.2 inches of water. This site would normally have 43.3 inches on June 1. Temperatures were 1-2 degrees below normal for May.

For more information contact your local Natural Resources Conservation Service office.

Wenatchee - Chelan River Basins

Streamflow Forecasts - June 1, 1999

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
		90%		70%		50% (Most Probable)		30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
CHELAN RIVER near Chelan	JUN-SEP	984	1080	1145	155	1210	1306	738
	JUN-JUL	791	876	933	155	990	1075	602
	JUN-JUN	487	556	603	155	650	719	390
STEHEKIN near STEHEKIN	JUN-SEP	686	750	794	145	838	902	548
	JUN-JUL	520	572	605	144	644	696	422
	JUN-JUN	304	345	373	144	401	442	259
ENTIAT RIVER near Ardenvoir	JUN-SEP	184	199	210	145	221	236	145
	JUN-JUL	184	199	210	145	221	236	145
	JUN-JUN	104	117	126	145	135	149	87
WENATCHEE at Plain	JUN-JUL	755	821	866	144	911	977	600
	JUN-SEP	911	995	1052	147	1109	1193	718
	JUN-JUN	482	533	567	145	601	652	391
STEMILT nr Wenatchee (miners in)	MAY-SEP	148	175	193	140	211	238	138
ICICLE CREEK near Leavenworth	JUN-SEP	240	264	280	141	296	320	198
	JUN-JUL	206	229	244	142	259	282	172
	JUN-JUN	129	150	165	142	180	201	116

WENATCHEE - CHELAN RIVER BASINS Reservoir Storage (1000 AF) - End of May

WENATCHEE - CHELAN RIVER BASINS Watershed Snowpack Analysis - June 1, 1999

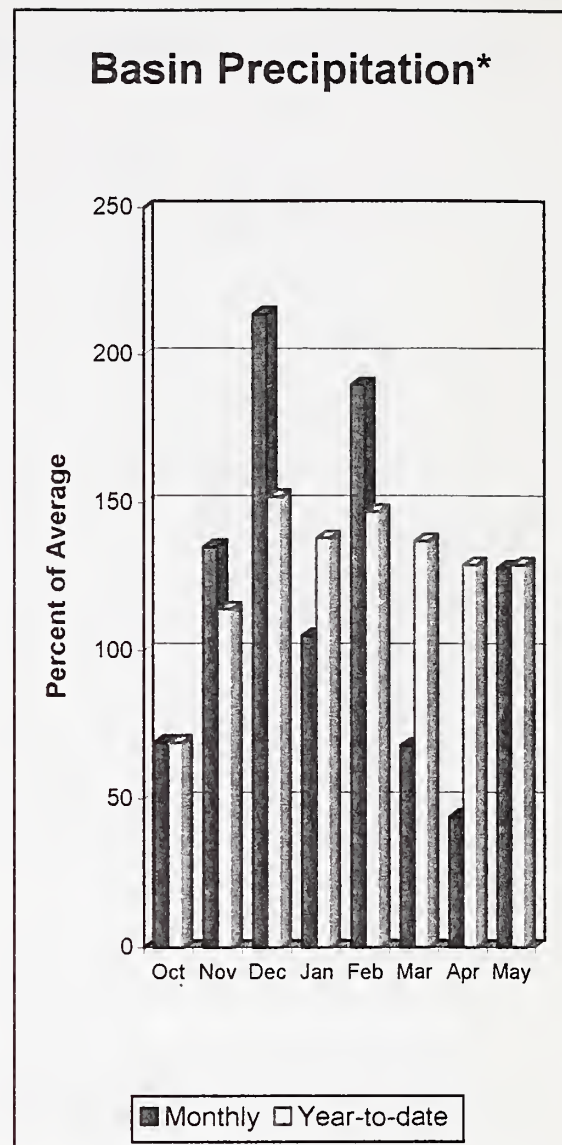
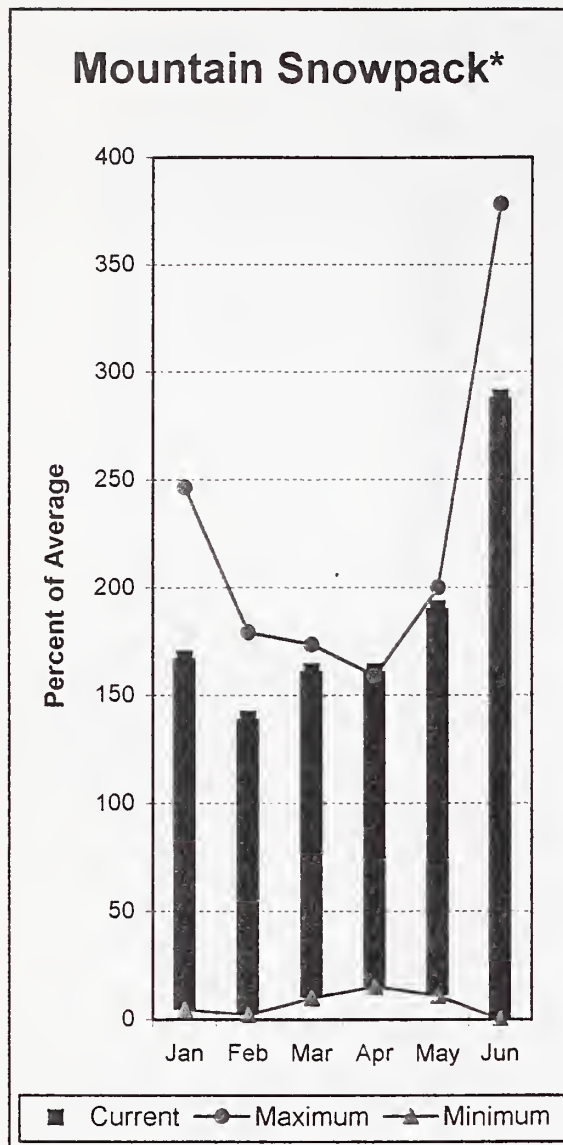
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
CHELAN LAKE	676.1	324.4	601.7	450.6	CHELAN LAKE BASIN	4	255	238
					ENTIAT RIVER	1	0	0
					WENATCHEE RIVER	6	293	243
					SQUILCHUCK CREEK	0	0	0
					STEMILT CREEK	1	0	0
					COLOCKUM CREEK	1	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

Upper Yakima River Basin



*Based on selected stations

June 1 reservoir storage for the Upper Yakima reservoirs was 652,000-acre feet, or 88% of average. Forecasts for the Yakima River at Cle Elum are for 134% of average. Lake inflows are all expected to be much above average this summer. May streamflows within the basin were: the Yakima near Cle Elum 98% and the Cle Elum River near Roslyn at 100%. June 1 snowpack was 288% based upon 7 snow courses and SNOTEL readings within the Upper Yakima Basin. Precipitation was 128% of average for May and 129% for the water-year-to-date. Temperatures were 2 degrees below normal. Volume forecasts for the Yakima Basin are for natural flow. As such, they June differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Upper Yakima River Basin

Streamflow Forecasts - June 1, 1999

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
		90%		70%		Chance Of Exceeding *		30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(1000AF)	50% (Most Probable)	(1000AF)	
KEECHELUS LAKE INFLOW	JUN-JUL	64	73	79	155	85	95	51
	JUN-SEP	78	89	96	155	103	114	62
	JUN-JUN	45	52	56	156	61	67	36
KACHESS LAKE INFLOW	JUN-JUL	53	60	65	145	70	77	45
	JUN-SEP	61	69	75	144	81	89	52
	JUN-JUN	38	44	48	144	51	57	33
CLE ELUM LAKE INFLOW	JUN-JUL	230	254	271	135	288	312	201
	JUN-SEP	272	301	321	134	341	370	239
	JUN-JUN	149	170	184	134	198	219	137
YAKIMA at Cle Elum	JUN-JUN	292	327	350	139	373	408	251
	JUN-JUL	420	470	505	140	540	590	361
	JUN-SEP	521	580	620	140	660	719	444

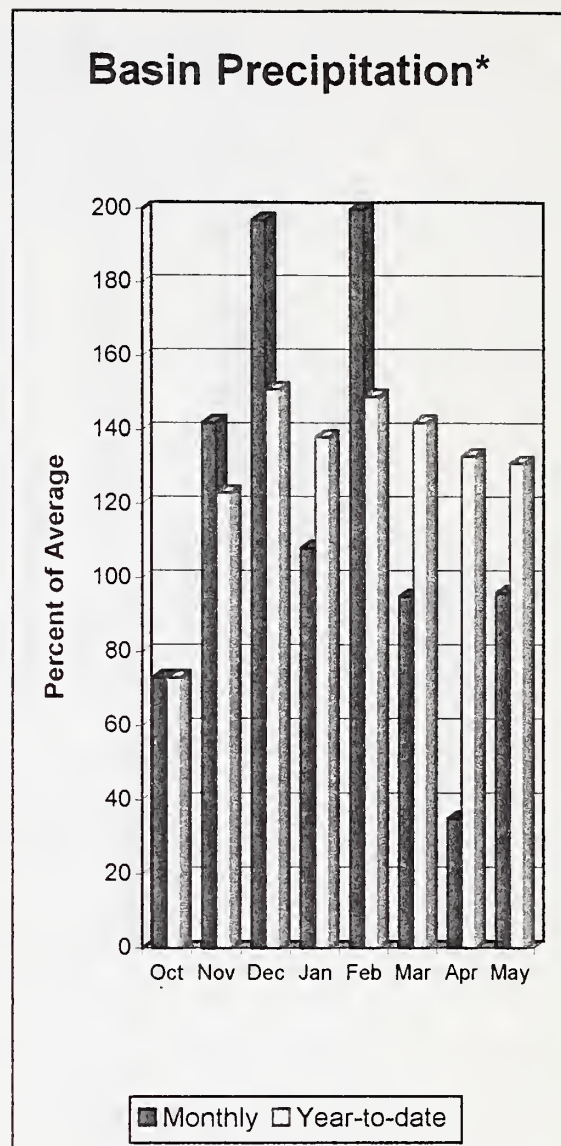
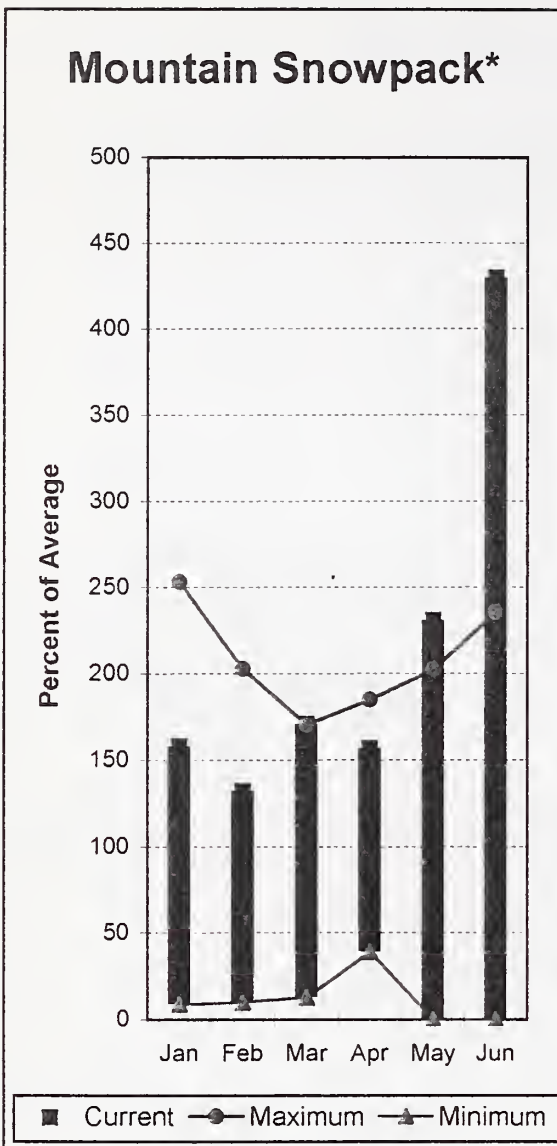
UPPER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of May					UPPER YAKIMA RIVER BASIN Watershed Snowpack Analysis - June 1, 1999			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
KEECHELUS	157.8	102.3	157.5	144.0	UPPER YAKIMA RIVER	6	532	385
KACHESS	239.0	220.4	238.9	218.0				
CLE ELUM	436.9	329.3	437.0	378.0				

70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

Lower Yakima River Basin



*Based on selected stations

May streamflows within the basin were: the Yakima River near Parker, 113%; the Naches River near Naches, 116%; and the Yakima at Kiona, 113% of average. June 1 reservoir storage for the Bumping and Rimrock reservoirs was 177,600-acre feet, or 92% of average. June 1 snowpack was 251% based upon 6 snow courses and SNOTEL readings within the Lower Yakima Basin and 661% of average in the Ahtanum Creek Basin. Precipitation was 96% of average for May and 131% for the water-year-to-date. Temperatures for the month were 2 degrees below normal. Forecasts for the Yakima River at Parker are for 163% of average; American River near Nile, 154%; Ahtanum Creek, 140%; and the Klickitat River near Glenwood, 186%. Volume forecasts for the Yakima Basin are for natural flow. As such, they June differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Lower Yakima River Basin

Streamflow Forecasts - June 1, 1999

		<<===== Drier =====>>		Future Conditions		===== Wetter =====>>		
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
BUMPING LAKE INFLOW	JUN-SEP	101	114	123	160	132	145	77
	JUN-JUL	86	97	105	162	113	125	65
	JUN-JUN	57	67	73	162	80	89	45
AMERICAN RIVER near Nile	JUN-SEP	88	95	100	154	105	113	65
	JUN-JUL	73	80	85	152	90	97	56
	JUN-JUN	50	56	59	152	63	69	39
RIMROCK LAKE INFLOW	JUN-SEP	176	190	200	140	210	224	143
	JUN-JUL	128	139	147	140	155	166	105
	JUN-JUN	78	88	94	140	101	110	67
NACHES near Naches	JUN-SEP	654	711	750	177	789	846	424
	JUN-JUL	536	583	615	177	647	694	347
	JUN-JUN	363	402	429	177	456	495	243
AHTANUM CREEK nr Tampico (2)	MAY-SEP	45	50	53	140	56	62	38
	MAY-JUL	40	45	48	141	51	56	34
	MAY-JUN	33	37	40	141	42	46	28
YAKIMA near Parker	JUN-SEP	1290	1430	1525	163	1620	1760	938
	JUN-JUL	1041	1156	1234	165	1312	1427	749
	JUN-JUN	1290	1430	1525	163	1620	1760	938
KLICKITAT near Glenwood	JUN-JUN	62	68	72	185	76	82	39
	JUN-SEP	113	123	130	186	137	147	70

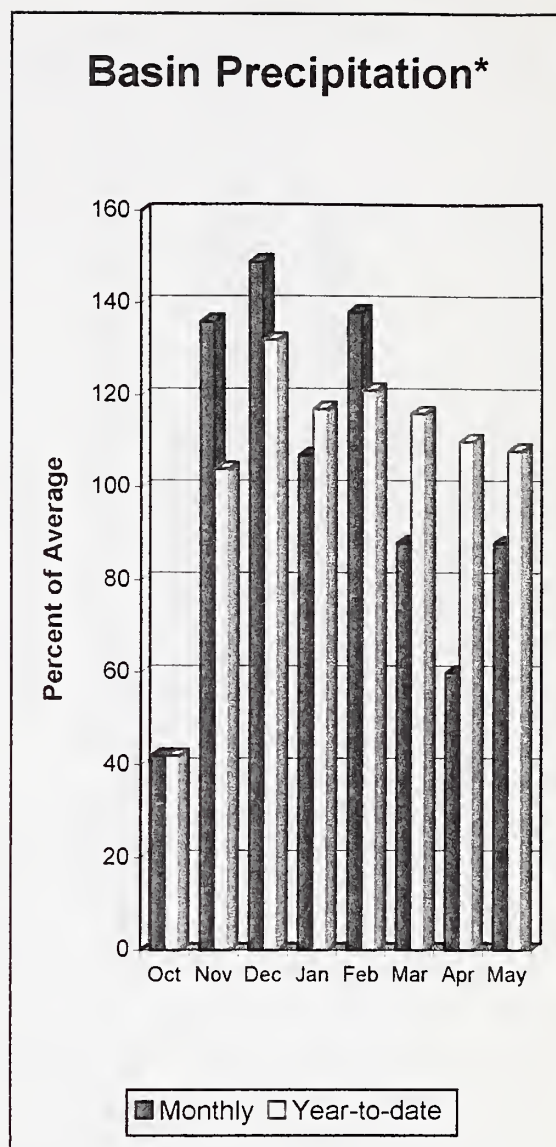
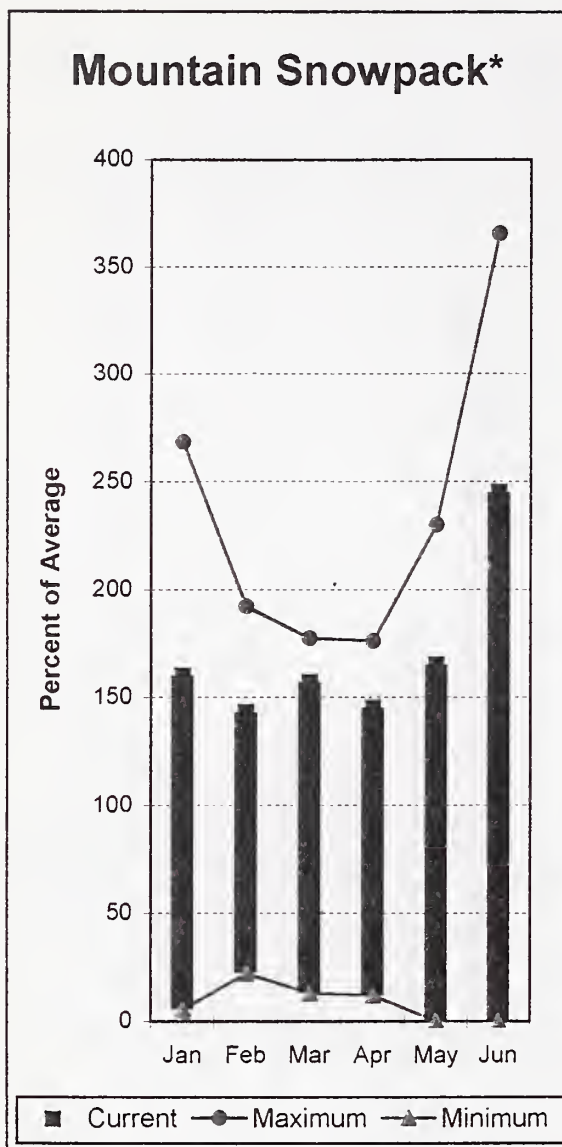
LOWER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of May					LOWER YAKIMA RIVER BASIN Watershed Snowpack Analysis - June 1, 1999			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BUMPING LAKE	33.7	25.5	35.4	27.0				
RIMROCK	198.0	152.1	198.4	167.0				

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Walla Walla River Basin



*Based on selected stations

May precipitation was 88% of average, bringing the year-to-date precipitation to 108% of average. Above average snowpack remained in the basin. The forecast is for 115% of average streamflow in the South Fork Walla Walla River and 156% for Mill Creek, during the coming summer. May streamflow was 138% of average for the Walla Walla River. The Touchet SNOTEL site had 18.4 inches of snow-water-equivalent; normally this site would melt-out by June 1. Average temperatures were 2-3 degrees below normal for the area.

For more information contact your local Natural Resources Conservation Service office.

Walla Walla River Basin

Streamflow Forecasts - June 1, 1999

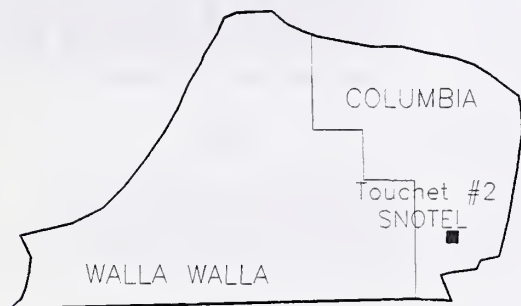
Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding +						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
MILL CREEK at Walla Walla	MAY-SEP	8.52	10.41	11.70	156	12.99	14.88	7.50
	MAY-JUL	8.23	10.12	11.40	156	12.68	14.57	7.30
	MAY-JUN	7.99	9.78	11.00	155	12.22	14.01	7.10
SF WALLA WALLA near Milton-Freewater	JUN-JUL	18.8	22	24	122	25	28	19.3
	JUN-SEP	31	35	38	115	40	44	33

WALLA WALLA RIVER BASIN Reservoir Storage (1000 AF) - End of May					WALLA WALLA RIVER BASIN Watershed Snowpack Analysis - June 1, 1999			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WALLA WALLA RIVER	2	0	3067

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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 (2) - The value is natural flow - actual flow may be affected by upstream water management.

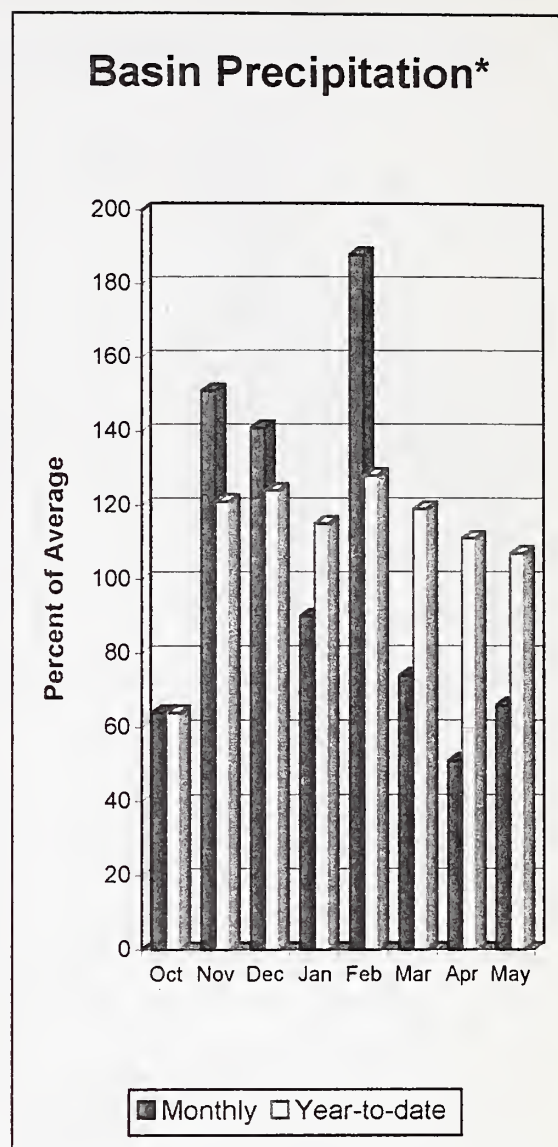
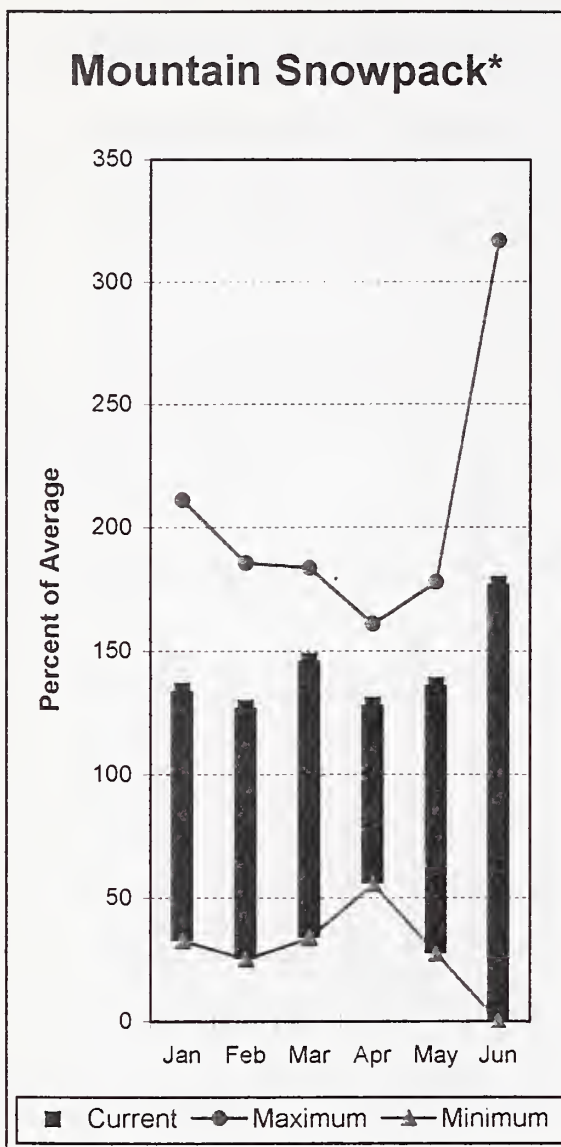


Mountain Snowpack & Precipitation
Walla Walla River Basin

Water-Year
Percent of Average
June 1, 1999

Snowpack - N/A
Precipitation - 108%

Lower Snake River Basin



*Based on selected stations

Streamflow forecasts for the Lower Snake River Basin are not available for the Jun-Sep period. May precipitation was 66% of average, bringing the year-to-date precipitation to 107% of average. June 1 snowpack was at 177% of average. May streamflow was 95% of average for the Clearwater River; 109% for the Snake River below Lower Granite Dam; and 121% for the Grande Ronde River near Troy. Average temperatures were 2 degrees below normal for the area.

For more information contact your local Natural Resources Conservation Service office.

Lower Snake River Basin

Streamflow Forecasts - June 1, 1999

Forecast Point	Forecast Period	<<===== Drier =====		Future Conditions		===== Wetter =====>>		30-Yr Avg.
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	

LOWER SNAKE RIVER BASIN FORECASTS ARE NOT AVAILABLE FOR JUNE 1

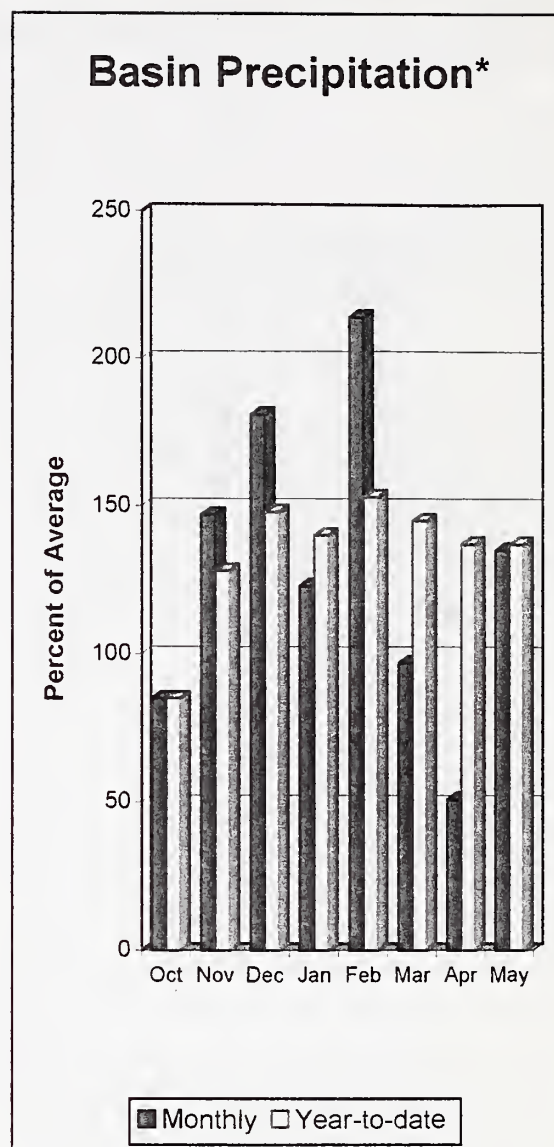
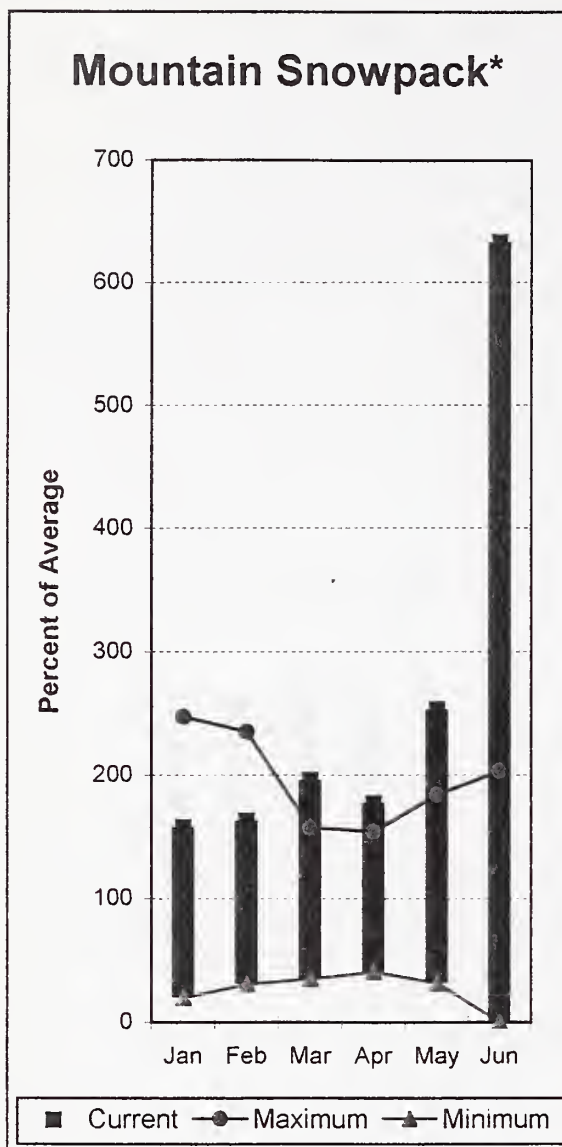
LOWER SNAKE RIVER BASIN Reservoir Storage (1000 AF) - End of May					LOWER SNAKE RIVER BASIN Watershed Snowpack Analysis - June 1, 1999			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					LOWER SNAKE, GRANDE RONDE	9	274	177

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

Cowlitz - Lewis River Basins



*Based on selected stations

The forecast for summer runoff in the Lewis River Basin is 195% of average. The forecast for the Cowlitz River at Castle Rock is for 146%, and the Klickitat River near Glenwood is 186% of average runoff. May streamflow for the Cowlitz River was 112% of average and 92% for the Lewis River. May precipitation was 135% of average, but 137% of average for the water-year. June 1 snow cover for the Cowlitz River Basin was 226%, and the Lewis River Basin was 1041% of average. Average snowpack for the combined Cowlitz - Lewis river basins was 633% of average, exceeding the previous maximum by 430%. Paradise Park SNOTEL recorded the most water content for the basin with 106.8 inches of water. Average June 1 water content at Paradise Park is 48.1 inches. Temperatures were 2 degrees below normal during May.

For more information contact your local Natural Resources Conservation Service office.

Cowlitz - Lewis River Basins

Streamflow Forecasts - June 1, 1999

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
LEWIS at Ariel (2)	JUN-JUL	619	661	690	195	719	761	354
	JUN-SEP	901	952	987	195	1022	1073	506
	JUN-JUN	395	434	460	195	486	525	236
COWLITZ R. bl Mayfield Dam (2)	JUN-SEP	700	1164	1480	151	1796	2260	982
COWLITZ R. at Castle Rock (2)	JUN-SEP	903	1497	1900	146	2303	2897	1299
KLICKITAT near Glenwood	JUN-JUN	62	68	72	185	76	82	39
	JUN-SEP	113	123	130	186	137	147	70
COLUMBIA R. at The Dalles (2)	JUN-SEP	62845	69665	74300	125	78935	85755	59652
	JUN-JUL	47744	53434	57300	126	61166	66856	45431

COWLITZ - LEWIS RIVER BASINS Reservoir Storage (1000 AF) - End of May

COWLITZ - LEWIS RIVER BASINS Watershed Snowpack Analysis - June 1, 1999

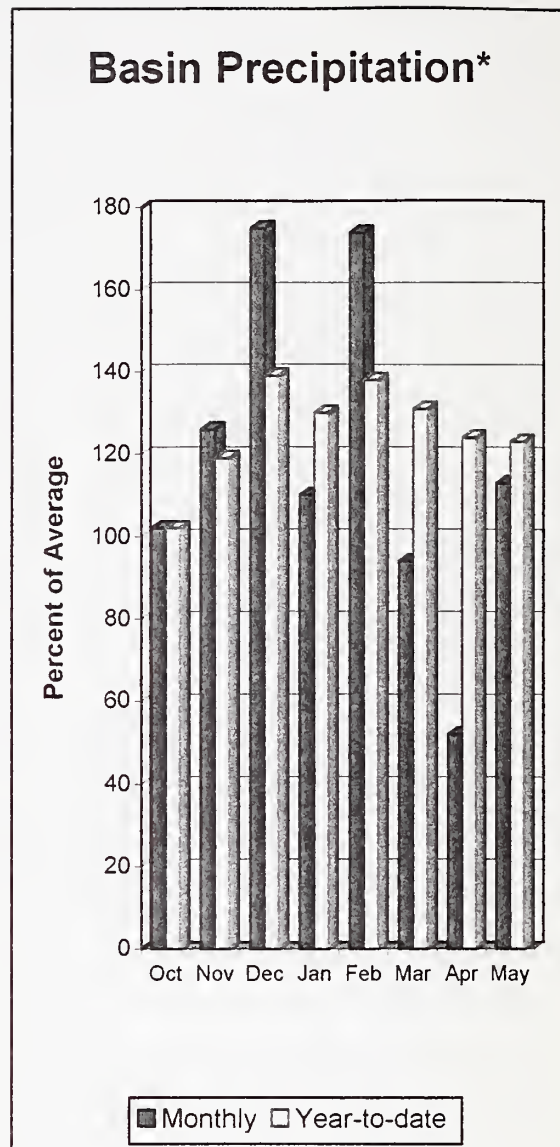
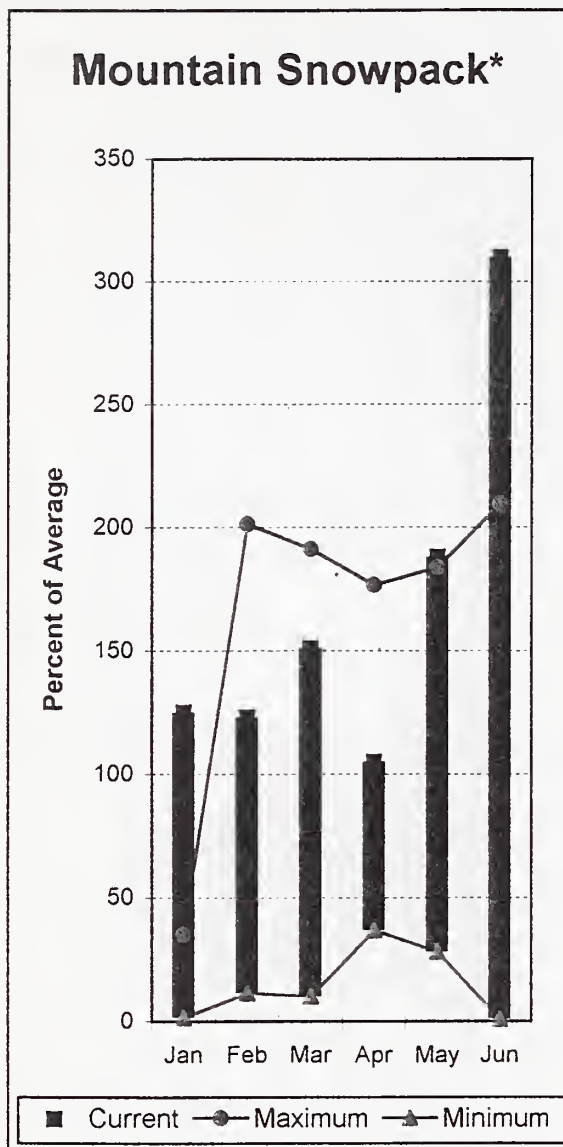
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					LEWIS RIVER	4	560	1041
					COWLITZ RIVER	7	206	226

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) The value is natural flow - actual flow may be affected by upstream water management.

White - Green River Basins



*Based on selected stations

Summer runoff is forecast to be 109% of average for the Green River and 115% of average for the White River near Buckley. June 1 snowpack was 208% of average in the White and Puyallup river basins; and 413% in the Green River Basin. Water content on June 1 at the Corral Pass SNOTEL, at an elevation of 6,000 feet, was 49.9 inches. This site has a June 1 average of 19.6 inches. May precipitation was 113% of average, bringing the water-year-to-date to 123% of average for the basins. Average temperatures in the area were 3 degrees below normal.

For more information contact your local Natural Resources Conservation Service office.

White - Green - Puyallup River Basins

Streamflow Forecasts - June 1, 1999

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
WHITE near Buckley (1,2)	JUN-JUL	211	245	260	116	275	309	225
	JUN-SEP	305	348	368	115	388	431	320
=====								
GREEN below Howard Hanson (1,2)	JUN-JUL	57	77	86	109	95	114	78
	JUN-SEP	83	106	116	109	126	149	106

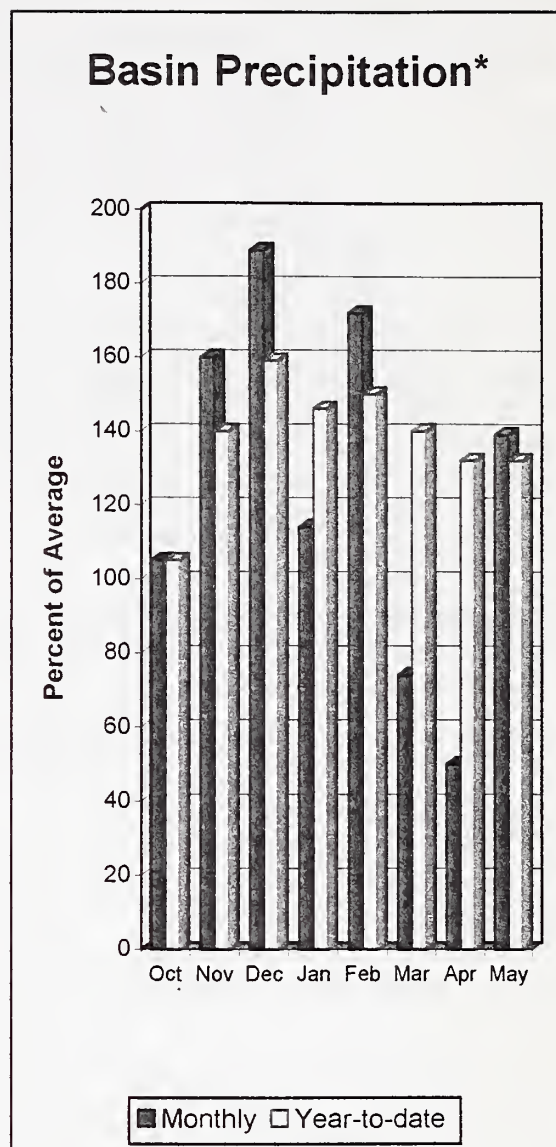
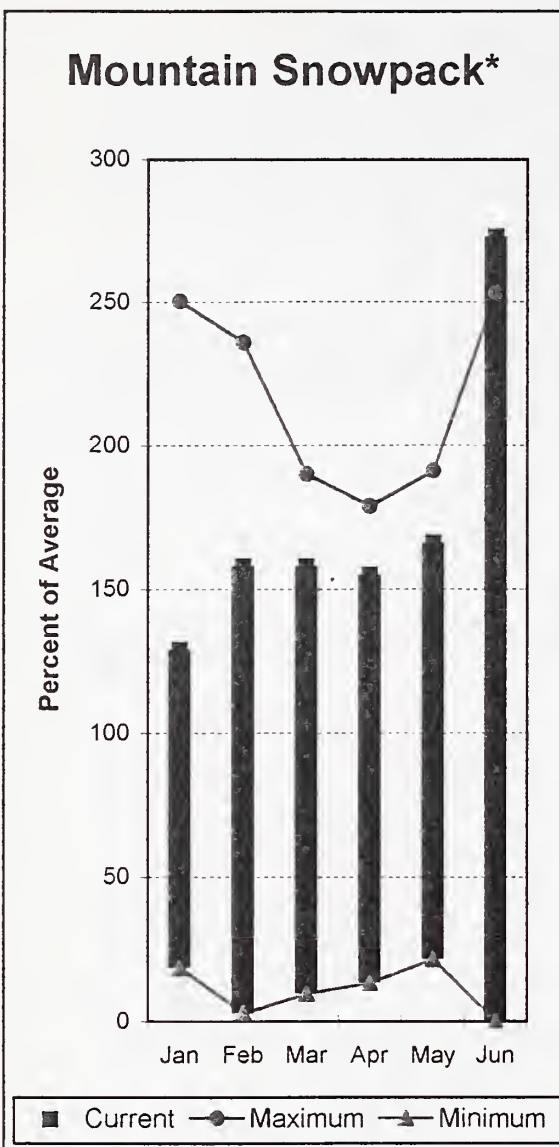
WHITE - GREEN - PUYALLUP RIVER BASINS Reservoir Storage (1000 AF) - End of May					WHITE - GREEN - PUYALLUP RIVER BASINS Watershed Snowpack Analysis - June 1, 1999			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WHITE RIVER	3	151	208
					GREEN RIVER	2	436	413
					PUYALLUP RIVER	3	151	208

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are 122% for the Cedar River near Cedar Falls; 125% for the Rex River; 132% for the South Fork of the Tolt River; and 127% for the Cedar River at Cedar Falls. Basin-wide precipitation for May was 139% of average, bringing water-year-to-date to 132% of average. June 1 snow cover in the Tolt River Basin was 301%; the Snoqualmie River Basin was 247%; and the Skykomish River Basin was 272% of average. Stevens Pass SNOTEL, at 4,070 feet, had 31.8 inches of water content. Average June 1 water content is 5.7 inches. May temperatures were slightly below normal.

For more information contact your local Natural Resources Conservation Service office.

Central Puget Sound River Basins

Streamflow Forecasts - June 1, 1999

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)		
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)		30% (1000AF)	10% (1000AF)
CEDAR near Cedar Falls	JUN-JUL	25	31	36	123	40	47	29
	JUN-SEP	32	40	45	122	50	58	37
	JUN-JUN	17.1	22	25	123	28	33	20
REX near Cedar Falls	JUN-JUL	6.76	9.67	11.64	126	13.61	16.52	9.21
	JUN-SEP	9.4	13.0	15.4	125	17.8	21	12.3
	JUN-JUN	4.63	6.89	8.29	126	9.69	11.75	6.58
CEDAR RIVER at Cedar Falls	JUN-JUL	18.8	24	27	127	30	35	21
	JUN-SEP	23	26	28	127	30	33	22
	JUN-JUN	16.6	22	25	129	28	33	19.4
SOUTH FORK TOLT near Index	JUN-JUL	6.55	7.56	8.24	131	8.92	9.93	6.30
	JUN-SEP	9.92	11.00	11.73	132	12.46	13.54	8.90
	JUN-JUN	4.09	4.93	5.50	131	6.07	6.91	4.20

CENTRAL PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of May

CENTRAL PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - June 1, 1999

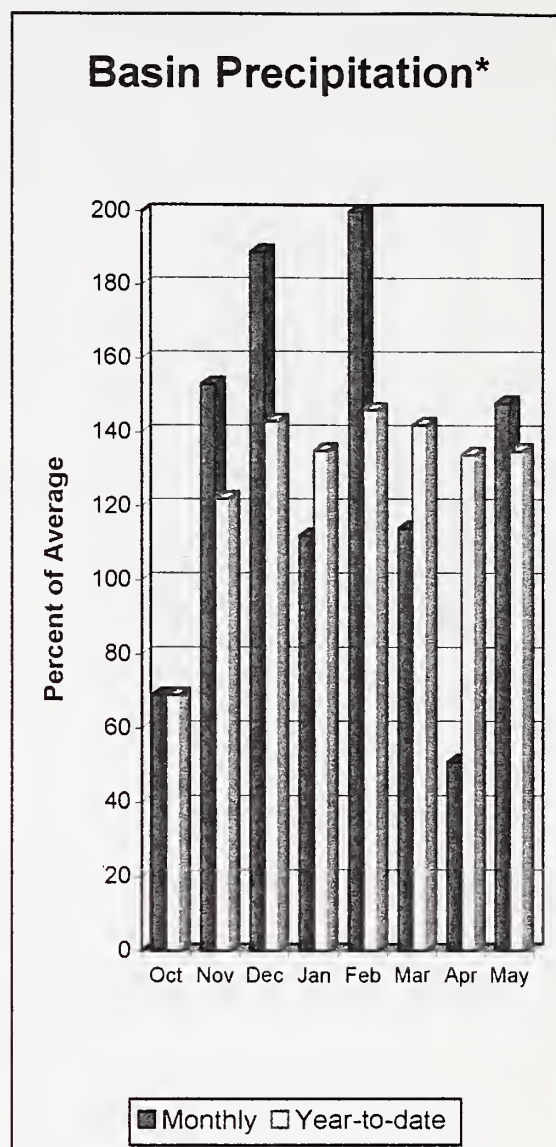
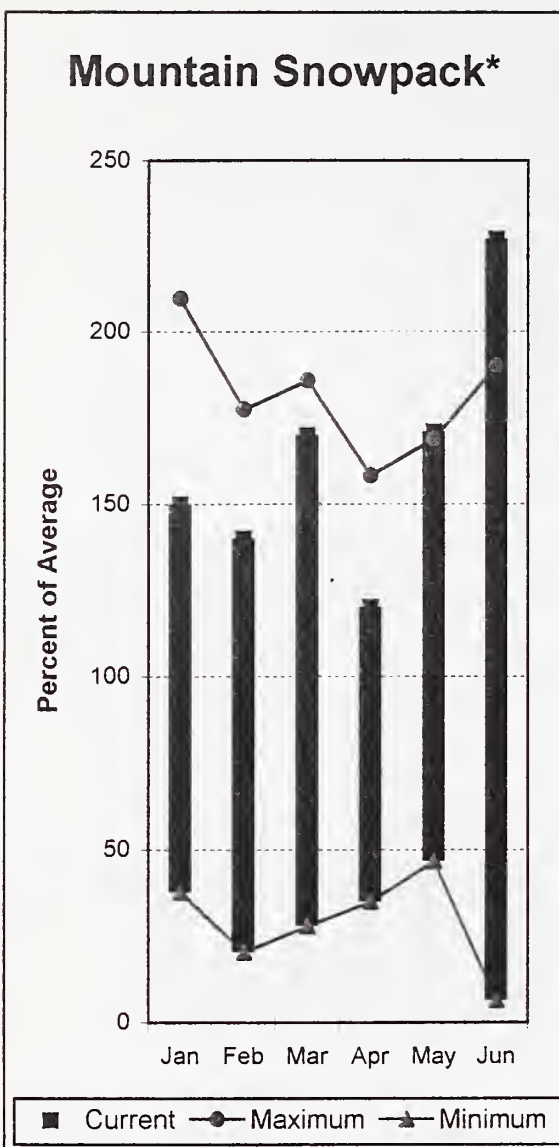
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					CEDAR RIVER	4	0	0
					TOLT RIVER	2	231	301
					SNOQUALMIE RIVER	4	300	295
					SKYKOMISH RIVER	2	261	272

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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 (2) - The value is natural flow - actual flow may be affected by upstream water management.

North Puget Sound River Basins



*Based on selected stations

Forecast for the Skagit River streamflow is for 133% of average for the spring and summer period. May streamflow in the Skagit River was 92% of average. Other forecast points included the Baker River at 137%, and Thunder Creek at 126% of average. North Puget Sound River Basin precipitation for May was 148% of average, bringing water-year-to-date to 135% of average. June 1 snow cover in the Skagit River Basin was 217%, the Baker River Basin was 163%, and the Nooksack River Basin was 302% of average. Rainy Pass SNOTEL, at 4,780 feet, had 43.9 inches of water content. Average June 1 water content is 20.4 inches. June 1, Diablo Reservoir storage was 102% average and 97% of capacity. Average May temperatures were 2 degrees below normal for the North Puget Sound basin.

For more information contact your local Natural Resources Conservation Service office.

North Puget Sound River Basins

Streamflow Forecasts - June 1, 1999

		<<===== Drier =====		Future Conditions =====		===== Wetter =====>>		
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
THUNDER CREEK near Newhalem	JUN-JUL	179	192	201	126	210	223	160
	JUN-SEP	296	313	325	126	337	354	259
SKAGIT at Newhalem (2)	JUN-SEP	1713	1819	1890	133	1961	2067	1418
BAKER RIVER near Concrete	JUN-JUL	623	651	670	137	689	717	490
	JUN-SEP	953	969	980	137	991	1007	717
	JUN-JUN	263	291	310	138	329	357	225

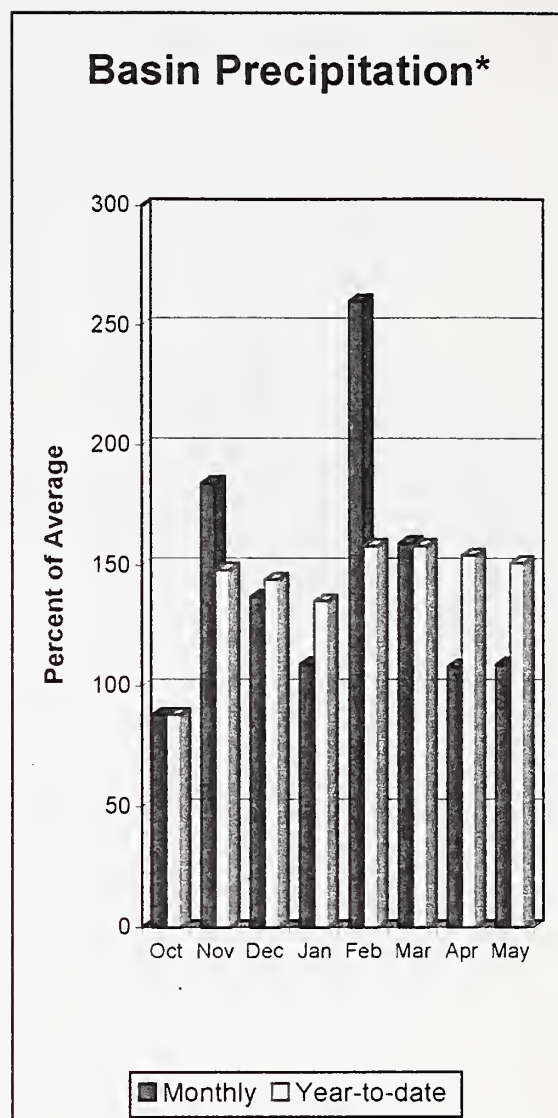
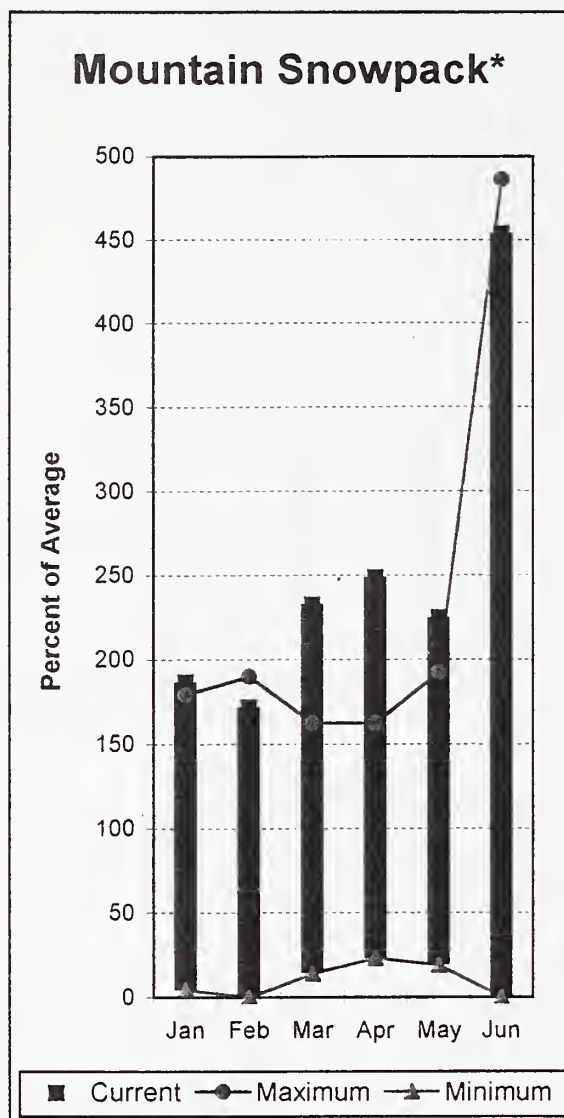
NORTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of May					NORTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - June 1, 1999			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ROSS		NO REPORT			SKAGIT RIVER	2	298	230
DIABLO RESERVOIR	90.6	87.5	87.1	86.1	BAKER RIVER	2	159	163
GORGE RESERVOIR		NO REPORT			NOOKSACK RIVER	2	0	302

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Olympic Peninsula River Basins



*Based on selected stations

June forecasts for summer runoff for streamflow in the Dungeness River Basin are 136% of average and 158% of average for the Elwha River. The Big Quilcene and Wynoochee rivers can expect much above average runoff this summer also. May precipitation was 109% of average. Precipitation has accumulated at 151% of average for the water-year. May precipitation at Quillayute was 5.89 inches. The thirty-year average for May is 5.29 inches. June 1 snowpack data, from historic sites, were not collected in the Olympic Basin. Temperatures were 2-3 degrees below average for the month.

For more information contact your local Natural Resources Conservation Service office.

Olympic Peninsula River Basins

Streamflow Forecasts - June 1, 1999

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
		90%		70%		Chance Of Exceeding *		30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(1000AF)	50% (Most Probable)	(1000AF)	
DUNGENESS near Sequim	JUN-SEP	127	134	139	136	144	151	102
	JUN-JUL	94	98	102	137	105	109	74
	JUN-JUN	51	55	58	135	61	66	43
ELWHA near Port Angeles	JUN-SEP	470	491	505	158	519	540	319
	JUN-JUL	338	354	365	157	376	392	233
	JUN-JUN	188	204	215	156	226	242	138

OLYMPIC PENINSULA RIVER BASINS Reservoir Storage (1000 AF) - End of May

OLYMPIC PENINSULA RIVER BASINS Watershed Snowpack Analysis - June 1, 1999

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					OLYMPIC PENINSULA	1	66	0
					ELWHA RIVER	0	0	0
					MORSE CREEK	0	0	0
					DUNGENESS RIVER	0	0	0
					QUILCENE RIVER	1	66	0
					WYNOOCHEE RIVER	0	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

† Average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada	Ministry of the Environment Investigations Branch, Victoria, British Columbia
State	Washington State Department of Ecology Washington State Department of Natural Resources
Federal	Department of the Army Corps of Engineers U.S. Department of Agriculture Forest Service U.S. Department of Commerce NOAA, National Weather Service U.S. Department of Interior Bonneville Power Administration Bureau of Reclamation Geological Survey National Park Service Bureau of Indian Affairs
Local	City of Tacoma City of Seattle Chelan County P.U.D. Pacific Power and Light Company Puget Sound Power and Light Company Washington Water Power Company Snohomish County P.U.D. Colville Confederated Tribes Spokane County Yakama Indian Nation Whatcom County Pierce County
Private	Okanogan Irrigation District Wenatchee Heights Irrigation District Newman Lake Homeowners Association Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.



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